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Cold Injuries, Active Duty, US Armed Forces, July 1999-June 2004

U.S. servicemembers train and operate in all weather (e.g., wind, rain, snow, cold) and geographic (e.g., mountain, desert, ocean) conditions. Prolonged and/or intense exposures to cold can significantly degrade the health, well-being, and operational effectiveness of servicemembers and their units. The U.S. military has developed extensive and effective countermeasures against threats associated with training and operating in cold environments.¹

Reports of cold weather injuries are routinely surveilled by the Army Medical Surveillance Activity (AMSA). This report summarizes frequencies, rates, and correlates of risk of cold injuries among active duty members of the U.S. Armed Forces during the period July 1999 to June 2004.

Methods. The surveillance period was defined as 1 July 1999 to 30 June 2004. The surveillance cohort included all individuals who served in an active component of the U.S. Armed Forces at any time during the surveillance period. For summary purposes, years were divided into 1 July through 30 June intervals (in order to include complete "cold weather seasons" in each yearly interval).

Inpatient, outpatient, and reportable medical event records in the Defense Medical Surveillance System (DMSS) were searched to identify all primary (first listed) diagnoses of "frostbite" (ICD-9-CM codes: 991.0-991.3), "immersion foot" (ICD-9-CM code: 991.4), "hypothermia" (ICD-9-CM code: 991.6), and "unspecified effect of reduced temperature" (ICD-9-CM code: 991.9) during the surveillance period.

To exclude follow-up medical encounters, only one of each type of cold injury per individual per year was included. Case counts, rates, and trends were summarized by Service and in relation to general military and demographic characteristics.

Results. During the period July 2003 to June 2004, 456 members of the U.S. Armed Forces had at least one medical encounter with a primary diagnosis of cold injury (tables 1-4). In general, rates of cold injuries (of any type) in the past year were similar to the rates in the preceding year (tables 1-4).

In the past year, the highest rates of cold injuries (of any type) were in the Army (61.3 per 100,000 person-years [p-yrs]) and Marines (30.5 per 100,000 p-yrs) (tables 1-4). Approximately two-thirds of all U.S. servicemembers with cold injuries were in the Army (table 1).

In all Services except the Marines, the most frequently reported cold injury was "frostbite." The rate of "frostbite" among soldiers (35.3 per 100,000 p-yrs) was at least 3-times higher than the rate in any other Service. Of note, rates of "frostbite" in the Army have been stable for the past five years.

In the Marines, the most frequently reported cold injuries were "hypothermia" and "immersion foot." Rates of these conditions were higher among Marines than among members of any other Service; however, among Marines, rates of these conditions in the past year were not remarkably different than in recent prior years.

As in prior years, in the Army and Marines, rates of frostbite, unspecified cold injuries, and cold injuries of any type were sharply higher among females than males. In all Services, rates of immersion foot were slightly to moderately higher among males than females. There were no strong or consistent relationships across the Services between gender and rates of hypothermia.

In general, in all Services, rates of cold injuries were highest among the youngest members and declined with age.

In all Services except the Navy, rates of frostbite, hypothermia, unspecified injuries, and injuries of any type were significantly higher among Black servicemembers compared to members of other racial/ethnic subgroups. In the Navy, rates of frostbite and injuries of any type—but not hypothermia, immersion foot, or unspecified injuries—were higher among Black sailors compared to others.

Finally, in the Army, rates of all types of cold injuries were higher among junior enlisted members than others. In the Marines, rates of frostbite and immersion foot were higher among junior enlisted members than others; but rates of hypothermia and unspecified injuries were highest among officers. In the Navy, rates of all types of cold injuries except

immersion foot were highest among officers; while in the Air Force, rates of all types of cold injuries except immersion foot were highest among junior enlisted members.

Editorial comment. In general, numbers, rates, and correlates of risk of cold injuries among US servicemembers were similar in the past year compared to recent prior years. As in the past, the largest numbers and highest rates of cold injuries by far occur among soldiers. This likely reflects differences in the natures, locations, and circumstances of the training and operations of the Services as well as differences in ascertainment of cold injury cases across the Services (e.g., records of medical encounters during field exercises, deployment operations, and aboard Navy ships are not routinely available for health surveillance purposes).

This report documents that, with some exceptions, Black and returning young servicemembers have higher rates of cold injuries—particularly frostbite compared to their counterparts. Other reports have documented that African American soldiers and individuals with cold injuries in the past have increased susceptibilities to cold injuries during prolonged or intense cold exposures.²⁻⁴ Special vigilance by individuals, line supervisors, commanders, and medical staffs is indicated to prevent cold injuries among those with known or suspected increased susceptibilities.

Commanders and supervisors at all levels should ensure that appropriate countermeasures to prevent cold injuries (e.g., training, clothing, equipment) in general are implemented.¹ The Disease Prevention and Control Program of the U.S. Army Center for Health Promotion and Preventive Medicine

Table 1. Incident primary diagnoses of cold injuries, by type, active duty, US Army, July 1999-June 2004

	Person years	Frostbite		Immersion foot		Hypothermia		Unspecified		Any cold injury	
		Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
Gender											
Male	2,033,010.7	640	31.5	222	10.9	131	6.4	465	22.9	1,368	67.3
Female	364,370.1	264	72.5	38	10.4	20	5.5	238	65.3	523	143.5
Age group											
<20	204,825.2	84	41.0	42	20.5	24	11.7	100	48.8	239	116.7
20-29	1,284,036.6	568	44.2	176	13.7	97	7.6	433	33.7	1,193	92.9
30-39	688,207.6	208	30.2	37	5.4	21	3.1	147	21.4	382	55.5
40-49	202,536.4	41	20.2	5	2.5	7	3.5	22	10.9	72	35.5
50+	19,958.1	3	15.0	1	5.0	2	10.0	1	5.0	6	30.1
Race/ethnicity											
White	1,363,823.4	320	23.5	147	10.8	73	5.4	281	20.6	785	57.6
Black	593,446.9	457	77.0	69	11.6	55	9.3	306	51.6	816	137.5
Hispanic	219,327.8	58	26.4	26	11.9	12	5.5	59	26.9	147	67.0
Other	222,965.7	69	30.9	19	8.5	11	4.9	57	25.6	144	64.6
Rank											
E1-4	1,114,003.2	568	51.0	168	15.1	98	8.8	463	41.6	1,215	109.1
E5-9	897,064.3	286	31.9	64	7.1	35	3.9	213	23.7	554	61.8
Officer	388,125.7	50	12.9	29	7.5	18	4.6	27	7.0	123	31.7
Year											
1999-2000	470,837.7	178	37.8	58	12.3	26	5.5	320	68.0	563	119.6
2000-2001	474,381.0	188	39.6	56	11.8	40	8.4	127	26.8	382	80.5
2001-2002	475,995.7	182	38.2	36	7.6	23	4.8	107	22.5	305	64.1
2002-2003	485,539.9	182	37.5	62	12.8	35	7.2	90	18.5	340	70.0
2003-2004	492,809.6	174	35.3	49	9.9	27	5.5	59	12.0	302	61.3

* Incident diagnoses per 100,000 person-years

Source: Defense Medical Surveillance System

Prepared by: Army Medical Surveillance Activity, USACHPPM

Figure 1. Number of soldiers with a primary diagnosis of a cold injury of any type, active duty, US Army, by year, July 1999-June 2004.

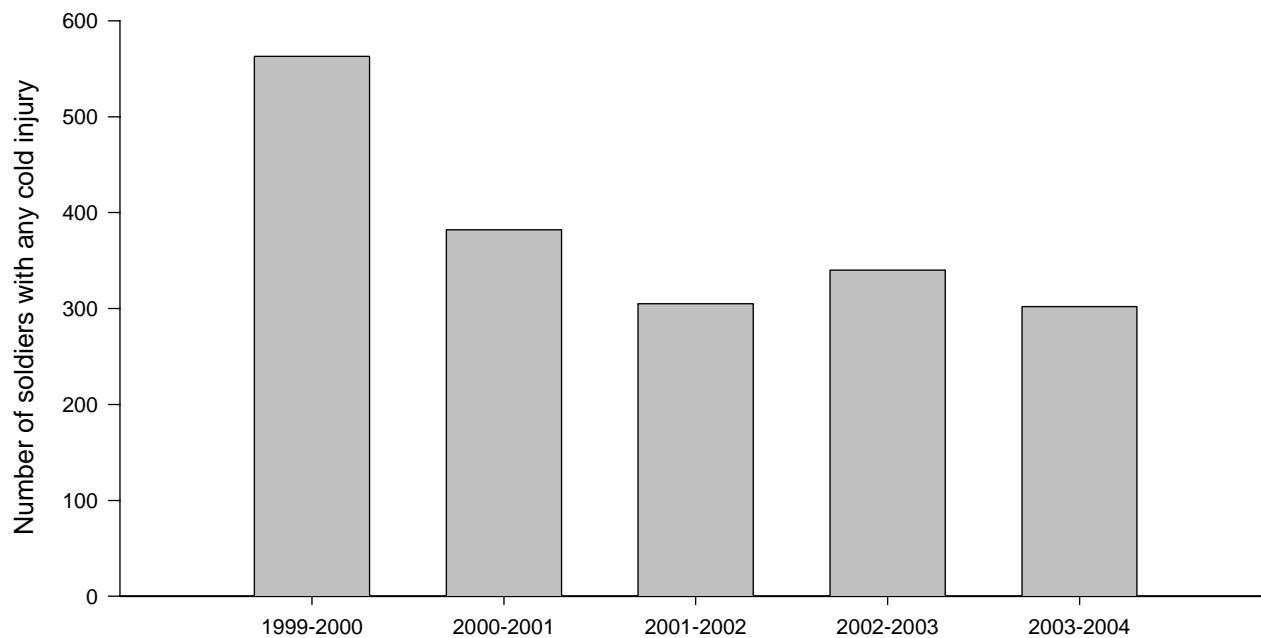
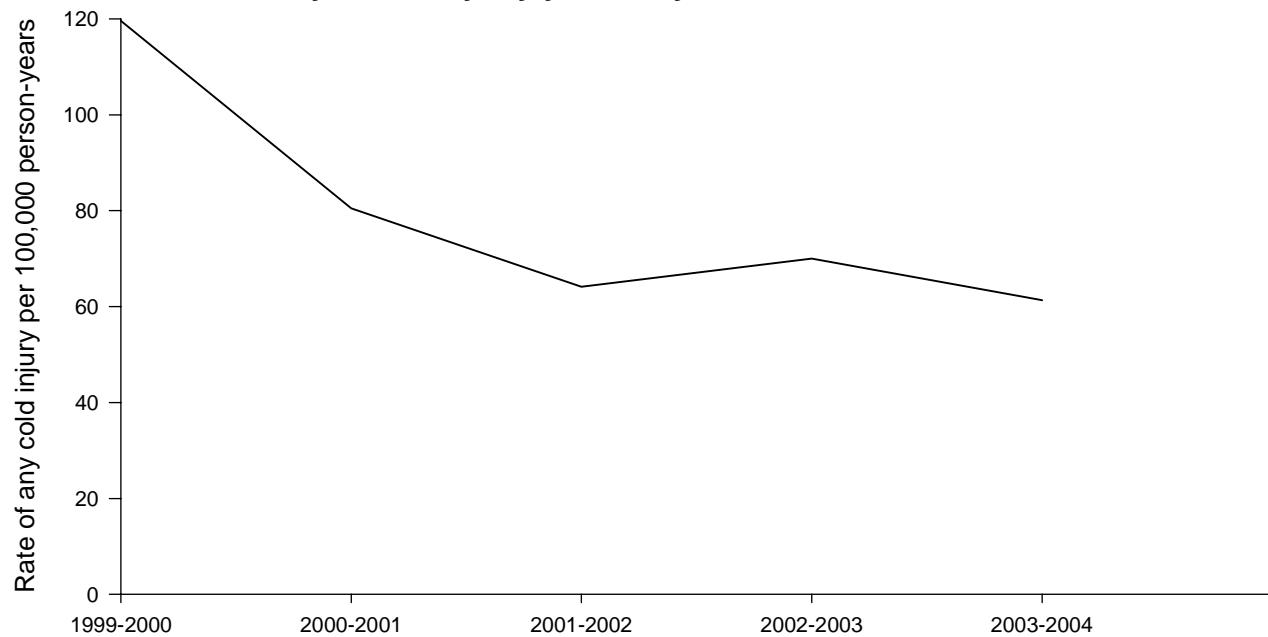


Figure 2. Rate of soldiers with a primary diagnosis of a cold injury of any type, active duty, US Army, by year, July 1999-June 2004.



in collaboration with the U.S. Army Research Institute of Environmental Medicine provide up-to-date cold injury prevention materials (including posters, presentation outlines, policies, regulations, and technical bulletins) at the following website:

<http://chppm-www.apgea.army.mil/coldinjury/>.

Analysis by Jamease R. Kowalczyk, MPH, Analysis Group, Army Medical Surveillance Activity.

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1. Castellani JW, O'Brien C, Baker-Fulco C, Sawka MN, Young AJ. Sustaining health and performance in cold weather operations. Technical note no. TN/02-2. US Army Research Institute of Environmental Medicine, Natick, Massachusetts. October 2001.
2. Cattermole TJ. The epidemiology of cold injury in Antarctica. *Aviat Space Environ Med.* 1999 Feb;70(2):135-40.
3. Candler WH, Ivey H. Cold weather injuries among U.S. soldiers in Alaska: a five-year review. *Mil Med.* 1997 Dec;162(12):788-91.
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Table 2. Incident primary diagnoses of cold injuries, by type, active duty, US Navy, July 1999-June 2004

	Person years	Frostbite		Immersion foot		Hypothermia		Unspecified		Any cold injury	
		Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
Gender											
Male	1,595,508.9	58	3.6	45	2.8	33	2.1	13	0.8	147	9.2
Female	261,663.9	11	4.2	7	2.7	7	2.7	2	0.8	27	10.3
Age group											
<20	154,718.8	9	5.8	21	13.6	6	3.9	3	1.9	39	25.2
20-29	954,962.8	44	4.6	22	2.3	23	2.4	8	0.8	95	9.9
30-39	548,604.1	13	2.4	5	0.9	8	1.5	2	0.4	28	5.1
40-49	183,218.6	3	1.6	4	2.2	3	1.6	2	1.1	12	6.5
50+	15,668.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Race/ethnicity											
White	1,109,173.0	34	3.1	35	3.2	28	2.5	9	0.8	104	9.4
Black	338,641.8	23	6.8	9	2.7	6	1.8	2	0.6	40	11.8
Hispanic	187,226.4	7	3.7	5	2.7	4	2.1	4	2.1	20	10.7
Other	222,131.6	5	2.3	3	1.4	2	0.9	0	0.0	10	4.5
Rank											
E1-4	789,323.3	41	5.2	42	5.3	26	3.3	9	1.1	116	14.7
E5-9	796,531.6	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Officer	271,197.1	22	8.1	8	2.9	10	3.7	5	1.8	45	16.6
Year											
1999-2000	364,673.2	10	2.7	20	5.5	10	2.7	2	0.5	42	11.5
2000-2001	365,697.2	15	4.1	14	3.8	8	2.2	5	1.4	42	11.5
2001-2002	373,391.2	8	2.1	1	0.3	6	1.6	2	0.5	17	4.6
2002-2003	377,835.7	22	5.8	7	1.9	8	2.1	0	0.0	37	9.8
2003-2004	375,575.5	14	3.7	10	2.7	8	2.1	6	1.6	36	9.6

* Rate calculated per 100,000 person-years

Source: Defense Medical Surveillance System

Prepared by: Army Medical Surveillance Activity, USACHPPM

Figure 3. Number of sailors with a primary diagnosis of a cold injury of any type, active duty, US Navy, July 1999-June 2004.

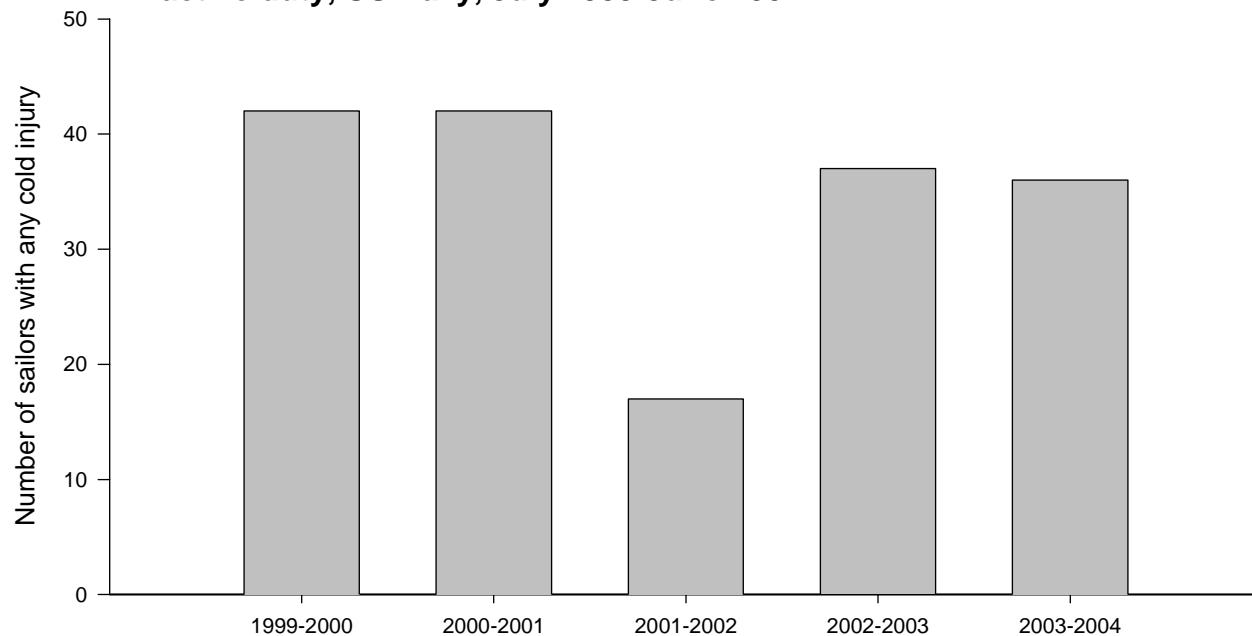
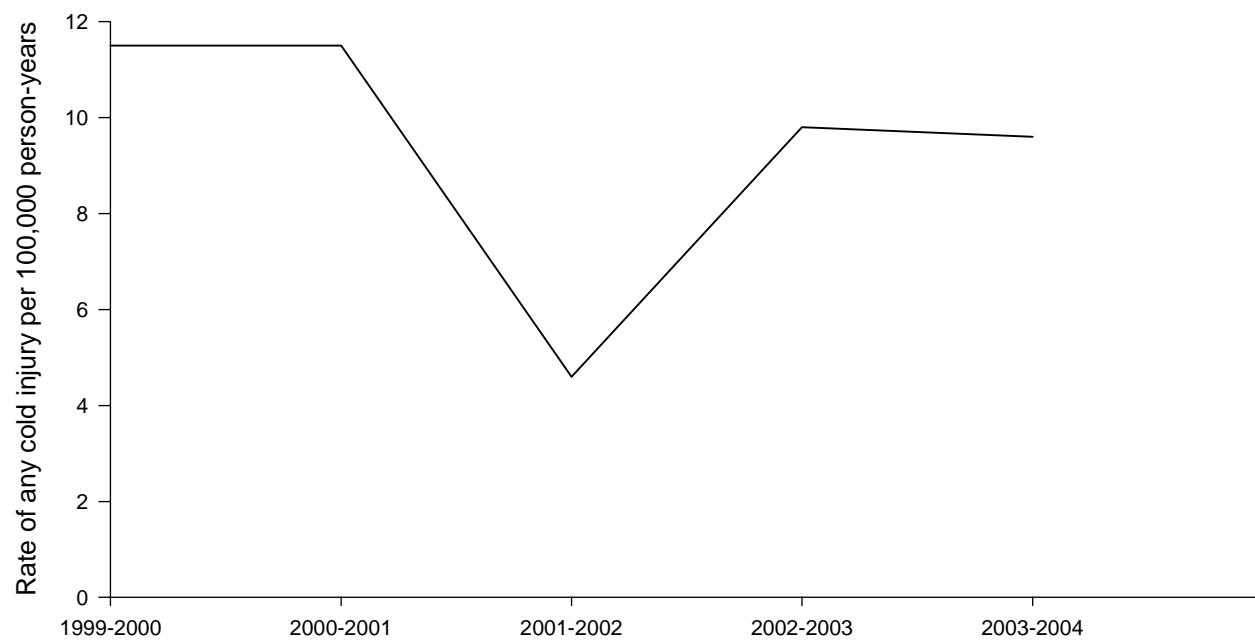


Figure 4. Rate of sailors with a primary diagnosis of a cold injury of any type, active duty, US Navy, by year, July 1999-June 2004.



**Table 3. Incident primary diagnoses of cold injuries, by type, active duty,
US Air Force, July 1999-June 2004**

	Person years	Frostbite		Immersion foot		Hypothermia		Unspecified		Any cold injury	
		Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
Gender											
Male	1,449,162.9	156	10.8	27	1.9	43	3.0	23	1.6	244	16.8
Female	343,758.9	28	8.1	5	1.5	9	2.6	10	2.9	52	15.1
Age group											
<20	115,746.5	26	22.5	3	2.6	8	6.9	7	6.0	44	38.0
20-29	849,729.3	118	13.9	18	2.1	30	3.5	20	2.4	182	21.4
30-39	594,234.9	29	4.9	7	1.2	8	1.3	4	0.7	47	7.9
40-49	218,843.0	8	3.7	4	1.8	6	2.7	2	0.9	20	9.1
50+	14,371.5	3	21.2	0	0.0	0	0.0	0	0.0	3	21.2
Race/ethnicity											
White	1,237,796.5	111	9.0	19	1.5	38	3.1	20	1.6	184	14.9
Black	270,947.0	55	20.3	9	3.3	9	3.3	11	4.1	84	31.0
Hispanic	117,916.2	9	7.6	3	2.5	3	2.5	1	0.8	16	13.6
Other	166,265.6	9	5.4	1	0.6	2	1.2	1	0.6	12	7.2
Rank											
E1-4	671,704.4	123	18.3	19	2.8	31	4.6	25	3.7	194	28.9
E5-9	768,966.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Officer	351,952.2	41	11.6	10	2.8	14	4.0	2	0.6	66	18.8
Year											
1999-2000	353,624.3	36	10.2	9	2.5	11	3.1	10	2.8	64	18.1
2000-2001	349,556.2	36	10.3	5	1.4	15	4.3	12	3.4	67	19.2
2001-2002	352,201.9	38	10.8	5	1.4	4	1.1	1	0.3	48	13.6
2002-2003	363,850.9	30	8.2	8	2.2	13	3.6	4	1.1	53	14.6
2003-2004	373,691.9	44	11.8	5	1.3	9	2.4	6	1.6	64	17.1

* Rate calculated per 100,000 person-years

Source: Defense Medical Surveillance System

Prepared by: Army Medical Surveillance Activity, USACHPPM

Figure 5. Number of airmen with a primary diagnosis of a cold injury of any type, active duty, US Air Force, by year, July 1999-June 2004

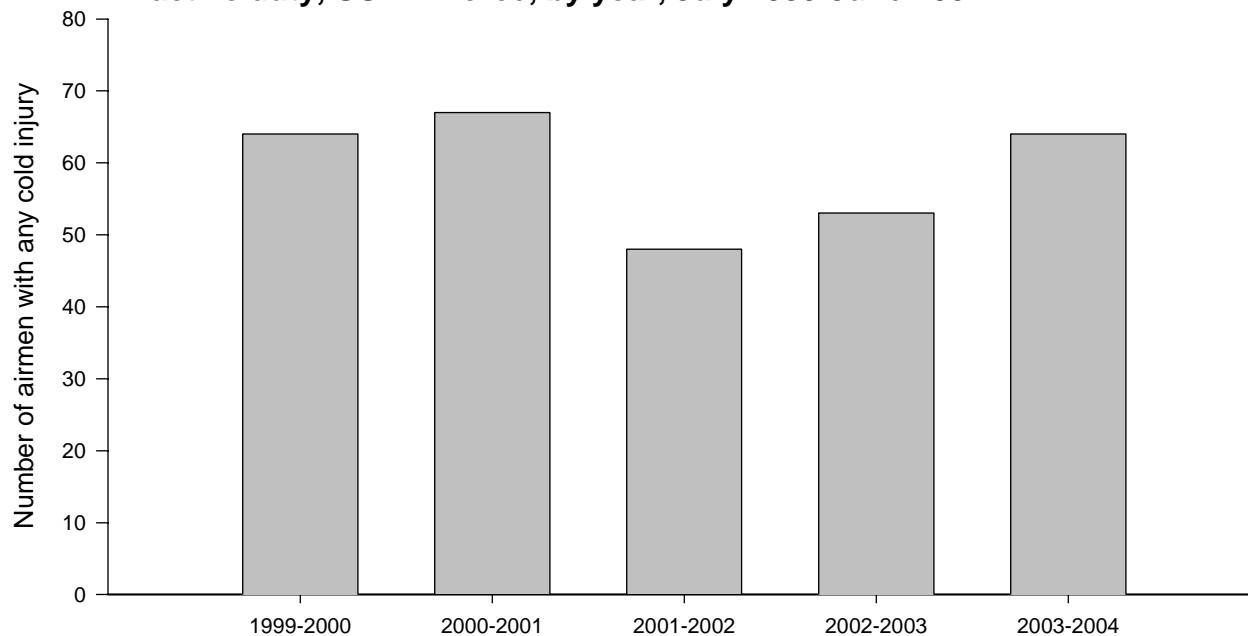
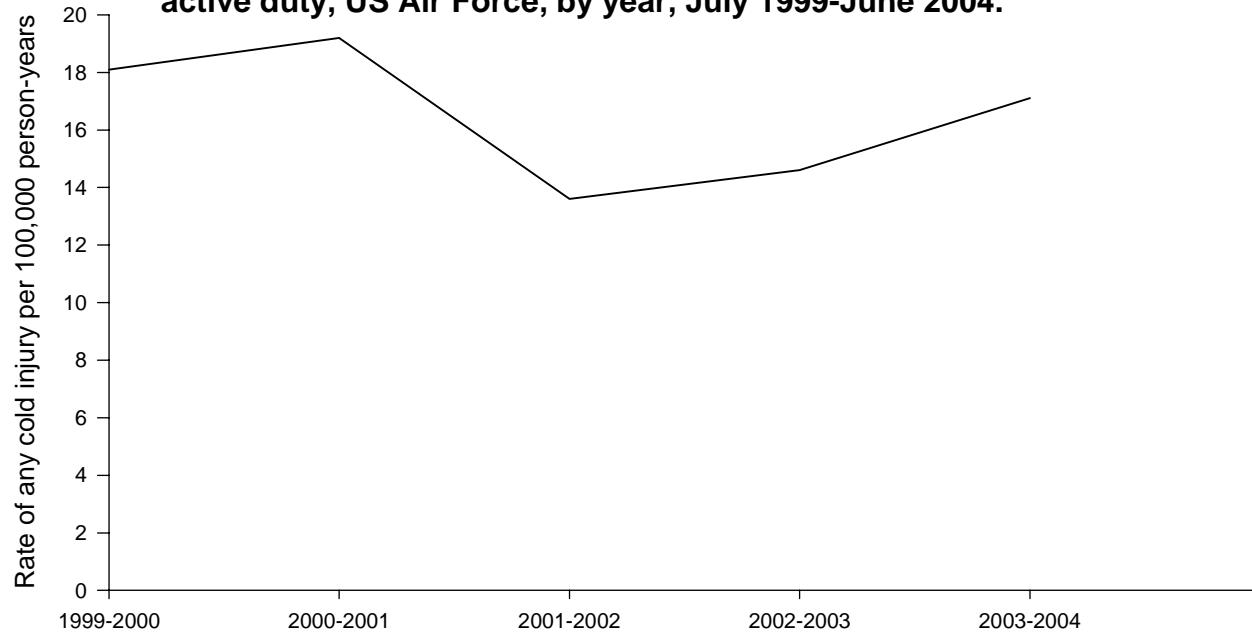


Figure 6. Rate of airmen with a primary diagnosis of a cold injury of any type, active duty, US Air Force, by year, July 1999-June 2004.



**Table 4. Incident primary diagnoses of cold injuries, by type, active duty,
US Marine Corps, July 1999-June 2004**

	Person years	Frostbite		Immersion foot		Hypothermia		Unspecified		Any cold injury	
		Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*	Cases	Rate*
Gender											
Male	814,060.5	98	12.0	77	9.5	92	11.3	20	2.5	284	34.9
Female	51,753.7	17	32.8	3	5.8	7	13.5	4	7.7	31	59.9
Age group											
<20	129,652.2	63	48.6	36	27.8	32	24.7	10	7.7	139	107.2
20-29	549,228.7	45	8.2	42	7.6	58	10.6	14	2.5	158	28.8
30-39	145,277.4	5	3.4	2	1.4	9	6.2	0	0.0	16	11.0
40-49	39,139.9	2	5.1	0	0.0	0	0.0	0	0.0	2	5.1
50+	2,522.4	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Race/ethnicity											
White	541,447.4	48	8.9	52	9.6	51	9.4	16	3.0	167	30.8
Black	118,803.3	46	38.7	9	7.6	22	18.5	6	5.1	81	68.2
Hispanic	119,639.5	16	13.4	14	11.7	12	10.0	1	0.8	42	35.1
Other	85,930.5	5	5.8	5	5.8	14	16.3	1	1.2	25	29.1
Rank											
E1-4	518,799.7	96	18.5	66	12.7	72	13.9	18	3.5	249	48.0
E5-9	255,726.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Officer	91,294.2	12	13.1	3	3.3	20	21.9	4	4.4	39	42.7
Year											
1999-2000	171,271.0	59	34.4	13	7.6	24	14.0	8	4.7	102	59.6
2000-2001	171,383.3	9	5.3	11	6.4	30	17.5	9	5.3	58	33.8
2001-2002	171,448.3	13	7.6	14	8.2	8	4.7	2	1.2	37	21.6
2002-2003	174,452.5	23	13.2	23	13.2	16	9.2	2	1.1	64	36.7
2003-2004	177,265.5	11	6.2	19	10.7	21	11.8	3	1.7	54	30.5

* Rate calculated per 100,000 person-years

Source: Defense Medical Surveillance System

Prepared by: Army Medical Surveillance Activity, USACHPPM

Figure 7. Number of Marines with a primary diagnosis of a cold injury of any type, active duty, US Marine Corps, by year, July1999-June 2004.

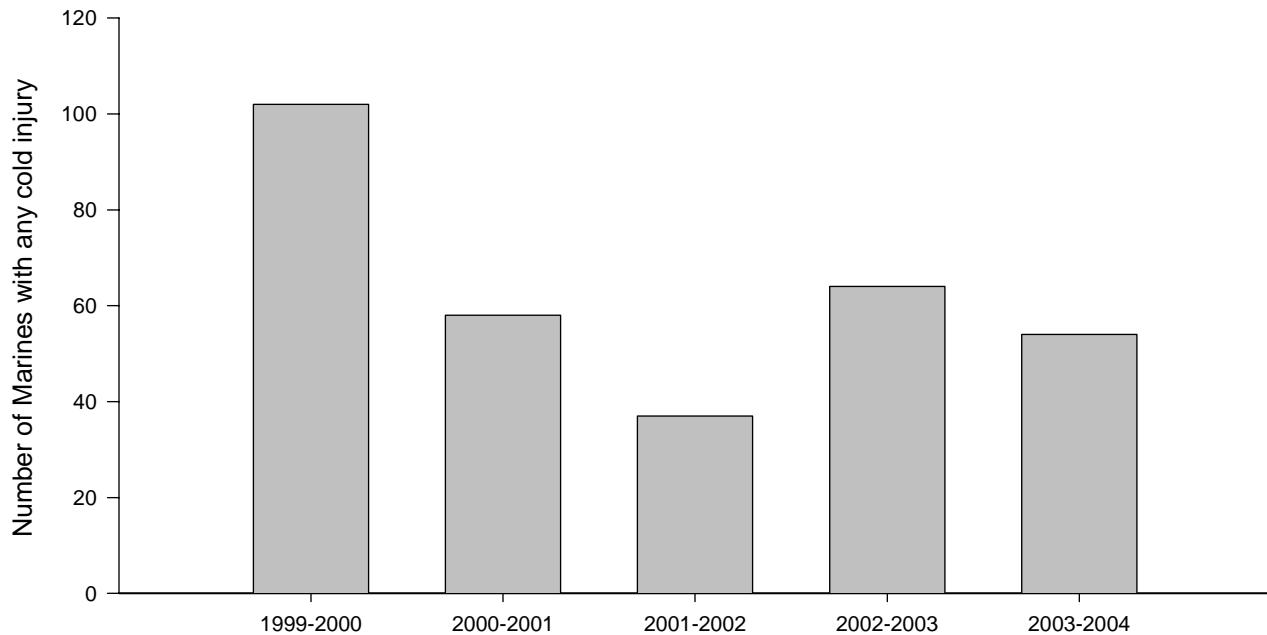
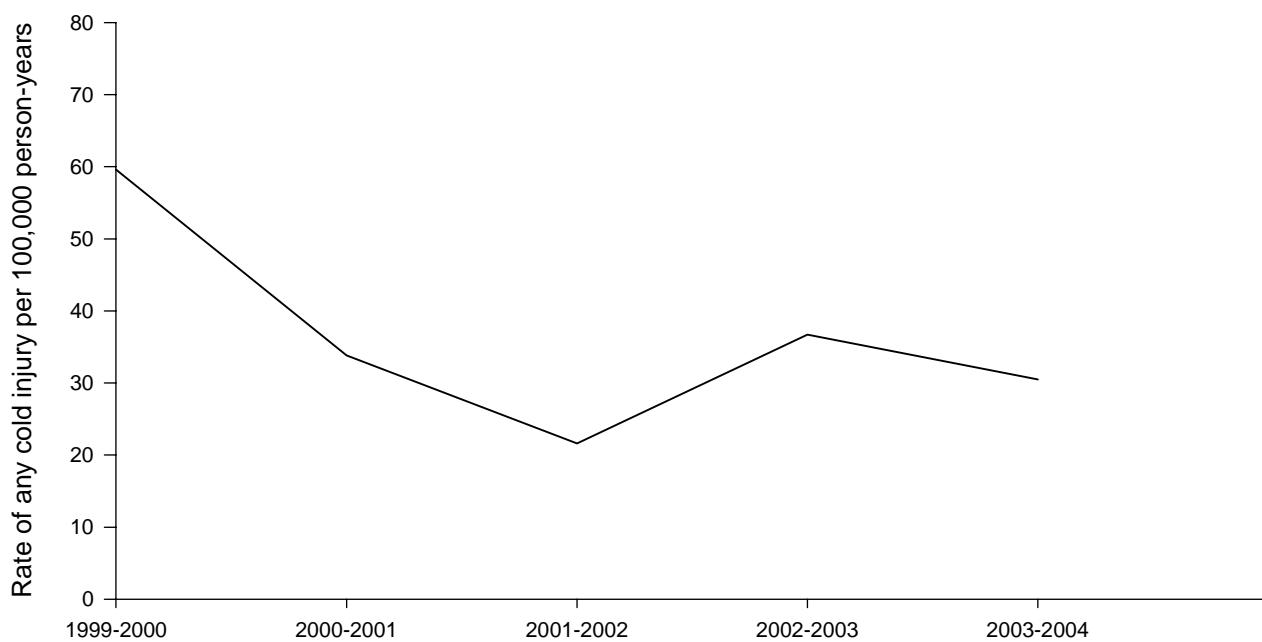
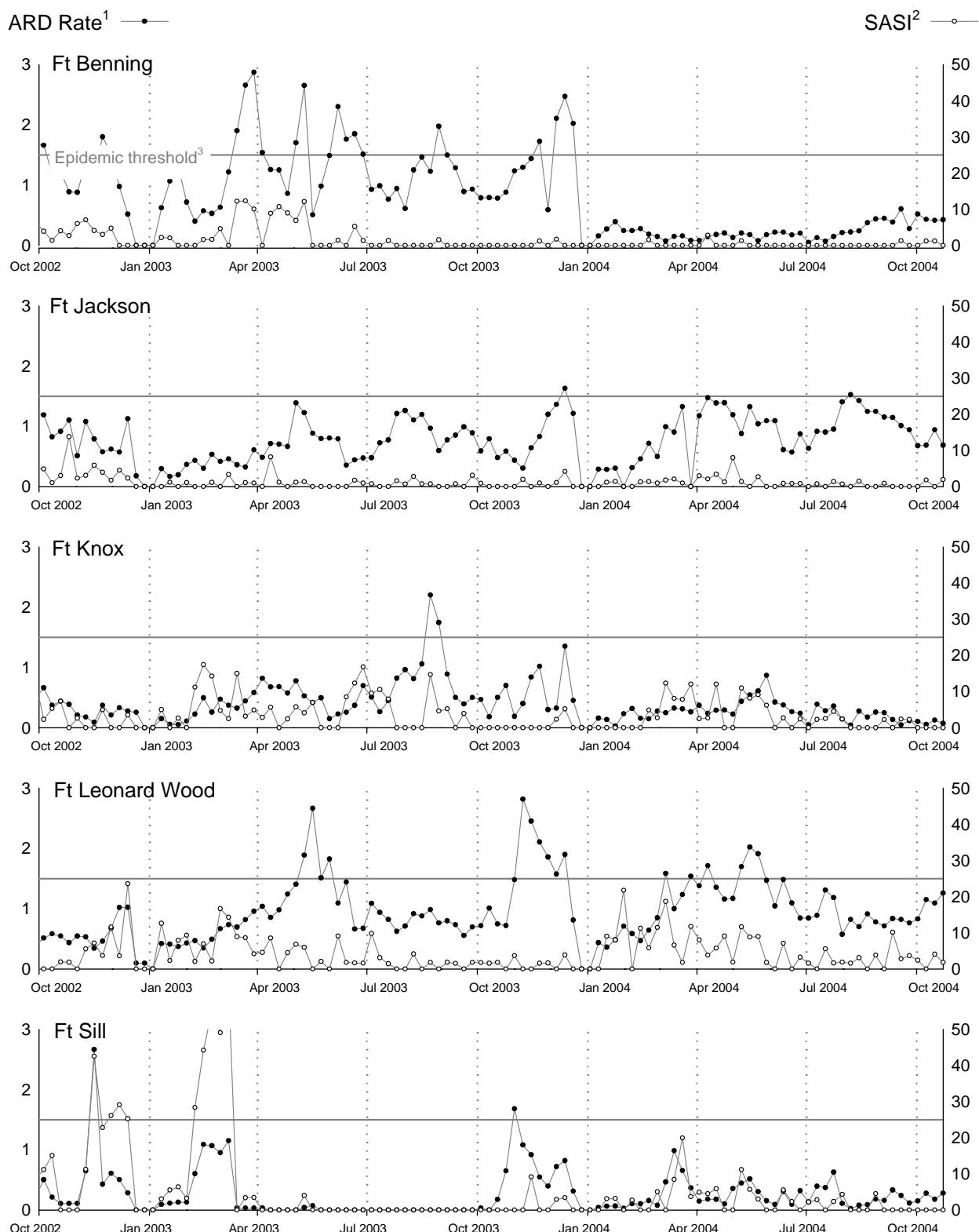


Figure 8. Rate of Marines with a primary diagnosis of a cold injury of any type, active duty, US Marine Corps, by year, July 1999-June 2004.



**Acute respiratory disease (ARD) and streptococcal pharyngitis (SASI),
Army Basic Training Centers, by week through October 23, 2004**



¹ARD rate = cases per 100 trainees per week

²SASI (Strep ARD surveillance index) = (ARD rate) × (rate of Group A beta-hemolytic strep)

³ARD rate ≥ 1.5 or SASI ≥ 25.0 for 2 consecutive weeks indicates an "epidemic"

Update: Pre- and Post-deployment Health Assessments, US Armed Forces, September 2002-October 2004

The June 2003 issue of the MSMR summarized the background of, rationale for, and applicable policies and guidelines related to pre- and post-deployment health assessments of deploying servicemembers.¹⁻¹⁰ Briefly, prior to deploying, the health of each servicemember is assessed to ensure his/her medical fitness and readiness for deployment; and at the time of redeployment, the health of each servicemember is again assessed to identify medical conditions and/or exposures of concern—to ensure timely and comprehensive evaluation and treatment.

Completed pre- and post-deployment health assessment forms are routinely sent to the Army Medical Surveillance Activity (AMSA) where they are scanned, data entered, and archived in the Defense Medical Surveillance System (DMSS).¹¹ In the DMSS, data recorded on pre- and post-deployment forms are integrated with data that document demographic and military characteristics and medical experiences (e.g., hospitalizations, ambulatory visits, immunizations) of servicemembers.¹¹ The continuously expanding integrated DMSS database can be used to monitor the health of servicemembers who participate in various deployments.¹¹⁻¹³

The overall success of deployment force health protection efforts depends in part on the completeness and quality of pre- and post-deployment health assessments. This report summarizes characteristics of servicemembers who completed pre- (since 1 September 2002) and post- (since 1 January 2003) deployment forms, responses to selected questions on pre- and post-deployment forms, and changes in responses of individuals from pre- to post-deployment.

Methods. For this update, the DMSS was searched to identify all pre- and post-deployment forms that were completed after 1 September 2002 (in order that assessments of servicemembers who deployed in October 2002 were included in analyses). For summary purposes, pre-deployment responses included all assessments (DD Form 2795) completed after 1 September 2002, and post-deployment responses included all assessments (DD Form 2796) completed after 1 January 2003.

Results. From 1 September 2002 to 31 October 2004, 808,462 pre-deployment health assessment forms were completed at field sites, shipped to AMSA, and entered into the DMSS database (table 1).

From 1 January 2003 to 31 October 2004, 661,567 post-deployment health assessments were completed at field sites, shipped to AMSA, and entered into the DMSS database (table 1).

In general, the distributions of self-assessments of “overall health status” were similar among pre- and post-deployment form respondents (figure 1). However, relatively more pre- (32.1%) than post-deployment (21.8%) respondents assessed their “overall health” as “excellent”; similar proportions (pre: 42.3%; post: 37.3%) of respondents to each of the forms assessed their “overall health” as “very good”; and relatively more post- (7.3%) than pre-deployment (0.8%) respondents assessed their overall health as “fair” or “poor” (figure 1).

On post-deployment assessments, approximately 21% of active and 37% of Reserve component respondents reported “medical/dental problems”; and approximately 3% and 5% of active and Reserve respondents, respectively, reported “mental health concerns” (table 2). Approximately, one-fifth of post-deployment forms overall documented that “referrals” were indicated (table 2).

Among servicemembers (n=338,971) who completed both forms, approximately half (46.4%) chose the same descriptor of their “overall health status” before and after deploying (figures 2, 3). Of those (n=181,567) who changed their health status assessments from pre- to post-deployment, approximately three-fourths (76.8%) changed by a single category (on a five category scale) (figure 2,3). Of those who changed by more than one category, nearly 6-times more indicated a decrement (n=35,905) than an improvement (n=6,252) in overall health (figure 3).

Overall, 15.4% of all servicemembers who completed post-deployment forms reported deployment-related “exposure concerns.” The likelihood of reporting an “exposure concern” increased monotonically with age (table 3). In general, reservists, members of the Marine Corps and

Figure 1. Percent distributions of self-assessments of health status, pre- and post-deployment, US Armed Forces, 1 January 2003-31 October 2004.

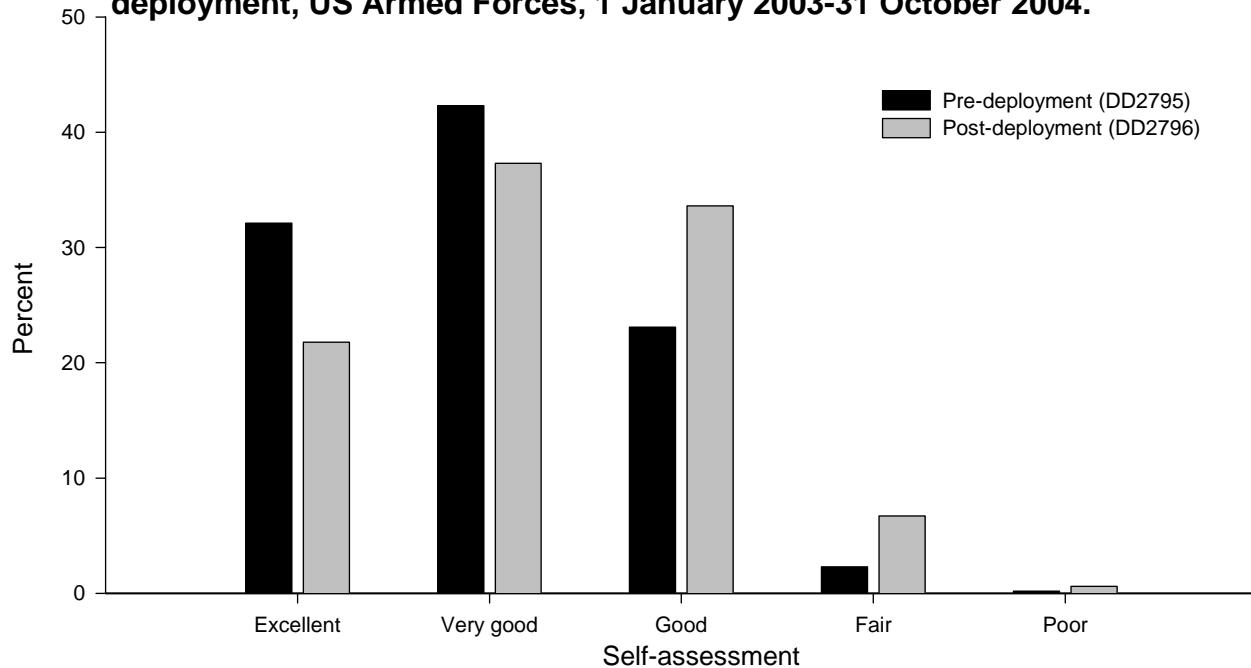


Figure 2. Self-assessed health status on post-deployment form, in relation to self-assessed health status pre-deployment, US Armed Forces, 1 January 2003-31 October 2004.

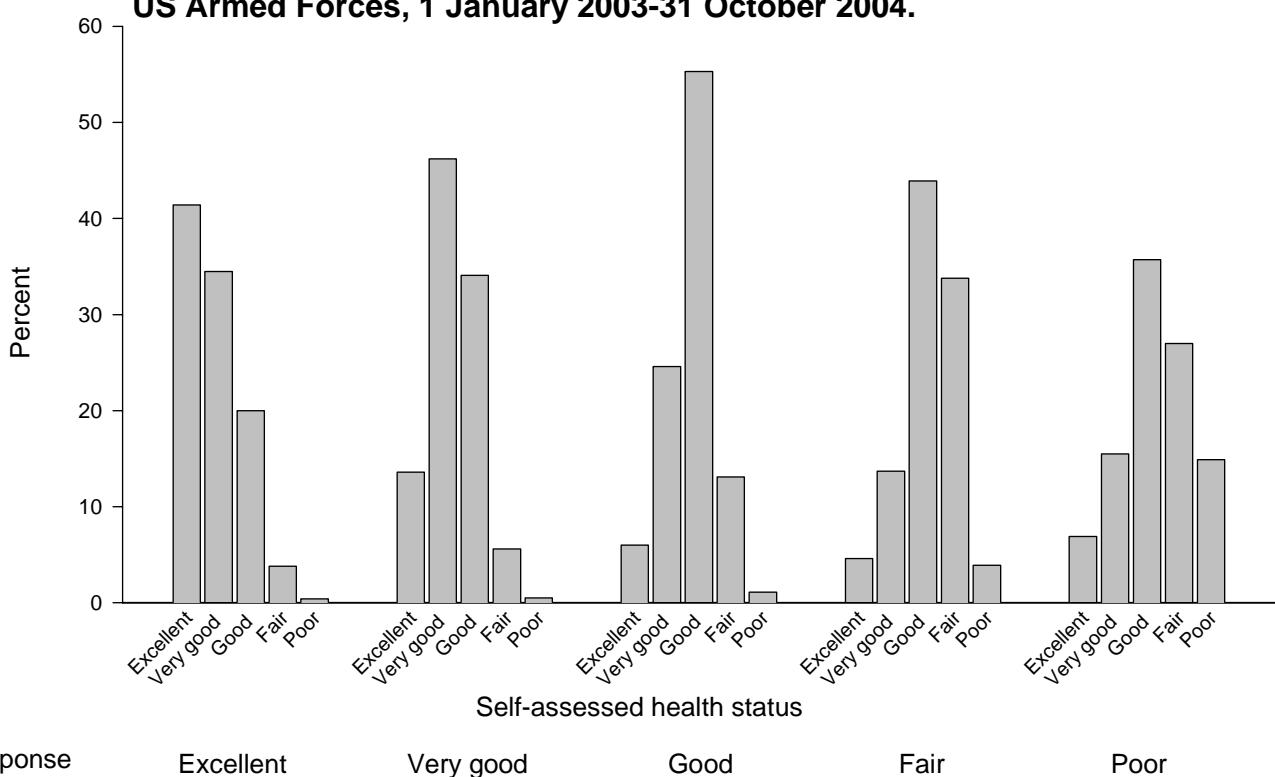


Table 1. Pre-deployment and post-deployment health assessments, by month and year, US Armed Forces

		Pre-deployment ¹		Post-deployment ²	
		No.	%	No.	%
Total		808,462	100.0	661,567	100.0
2002	September	11,158	1.4		
	October	16,564	2.0		
	November	20,073	2.5		
	December	17,090	2.1		
2003	January	69,160	8.6	5,948	0.9
	February	109,796	13.6	4,688	0.7
	March	69,646	8.6	6,284	0.9
	April	37,389	4.6	19,175	2.9
	May	12,808	1.6	88,607	13.4
	June	14,379	1.8	65,006	9.8
	July	17,879	2.2	52,032	7.9
	August	16,111	2.0	34,792	5.3
	September	12,547	1.6	31,974	4.8
	October	23,836	2.9	26,177	4.0
	November	19,335	2.4	20,205	3.1
	December	35,488	4.4	20,944	3.2
2004	January	66,670	8.2	37,882	5.7
	February	38,573	4.8	31,879	4.8
	March	22,058	2.7	65,605	9.9
	April	18,947	2.3	43,507	6.6
	May	27,119	3.4	17,345	2.6
	June	23,535	2.9	26,885	4.1
	July	21,565	2.7	22,947	3.5
	August	30,350	3.8	16,300	2.5
	September	29,727	3.7	15,461	2.3
	October	26,659	3.3	7,924	1.2

1. Total pre-deployment assessments (DD form 2795) from 1 September 2002-31 October 2004.

2. Total post-deployment assessments (DD form 2796) from 1 January 2003-31 October 2004.

Army, females, and officers were more likely to report “exposure concerns” than their respective counterparts (table 3).

Editorial comment. In general, servicemembers who have been mobilized/deployed since September 2002 have assessed their overall health as “good” to “excellent.” The distributions of self-assessed health statuses are generally similar prior to and after returning from deploying; however, more servicemembers reported declines than improvements in their overall health from pre- to post-deployment. This is not surprising considering the extreme physical and psychological stresses associated with mobilization, overseas deployment, and harsh and dangerous living and working conditions.^{14, 15}

The deployment health assessment process is specifically designed to identify, assess, and follow-up as necessary all servicemembers with concerns regarding their health and/or deployment-related exposures. Overall, approximately 1 of every 6 servicemembers who completed post-deployment health assessments reported an “exposure concern.” Of demographic factors, the strongest correlate of reporting an exposure concern was older age. The higher crude prevalences of exposure concerns among reservists (versus active component) and officers (versus enlisted), for example, may be related at least in part to differences in the age distributions of the respective groups. Trends in the numbers and natures of deployment-related “exposure concerns” will continue to be monitored as more servicemembers return from overseas assignments and/or demobilize.

Table 2. Responses to selected questions from post-deployment forms (DD2796) submitted since 1 January 2003, by service and component, US Armed Forces¹

Active component	Army	Navy	Air Force	Marines	Total
SMs with DD2796 at AMSA	172,707	63,955	59,463	54,779	350,904
Electronic version ²	56%	2%	20%	12%	36%
General health (“fair” or “poor”)	9%	5%	2%	5%	6%
Medical/dental problems	28%	12%	11%	18%	21%
Currently on profile	10%	1%	2%	3%	6%
Mental health concerns	5%	2%	1%	2%	3%
Exposure concerns	17%	5%	6%	11%	12%
Health concerns	14%	6%	5%	8%	10%
Referral indicated	26%	6%	9%	11%	17%
Med visit following referral ³	95%	67%	85%	58%	82%
Post deployment serum ¹	93%	73%	92%	65%	86%
Reserve component					
SMs with DD2796 at AMSA	138,526	11,049	23,385	12,817	185,777
Electronic version ²	50%	10%	12%	11%	42%
General health (“fair” or “poor”)	11%	5%	3%	9%	9%
Medical/dental problems	41%	35%	17%	35%	37%
Currently on profile	15%	5%	2%	4%	12%
Mental health concerns	6%	3%	1%	3%	5%
Exposure concerns	22%	15%	11%	28%	21%
Health concerns	22%	21%	9%	23%	20%
Referral indicated	25%	17%	12%	24%	23%
Med visit following referral ³	82%	80%	63%	54%	77%
Post deployment serum ¹	92%	79%	71%	70%	88%

1. As of 31 October 2004

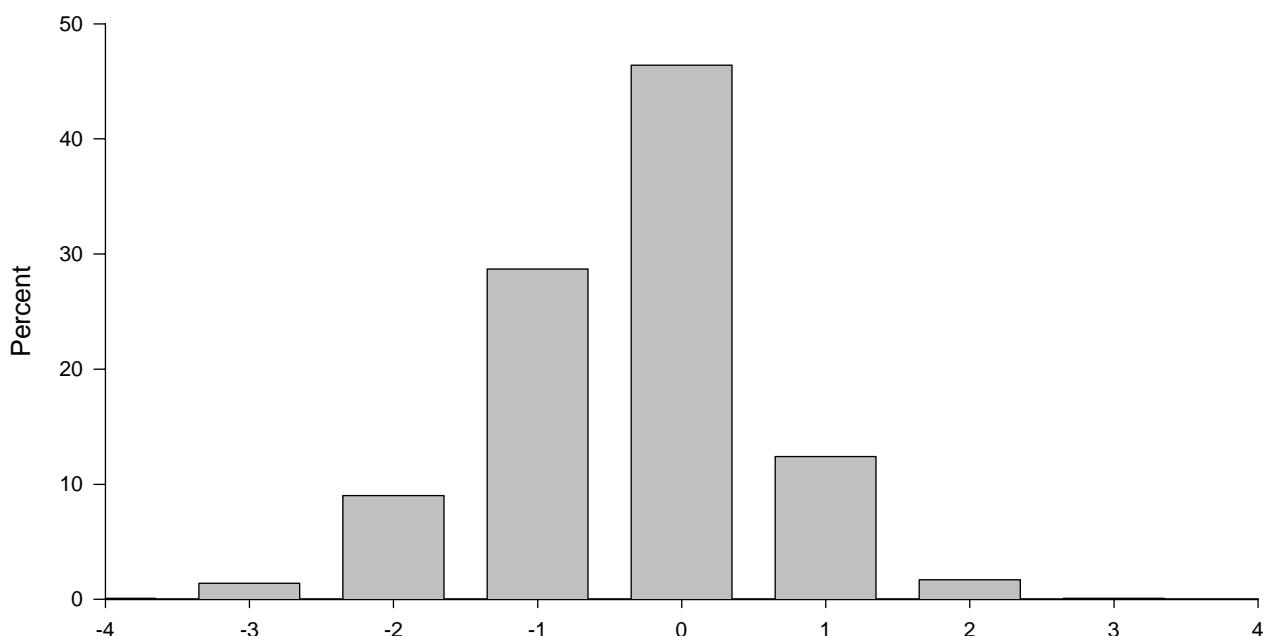
2. Only calculated for DD2796 completed since 1 June 2003.

3. Any hospitalization or outpatient visit within 6 months after referral.

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Figure 3. Distribution of self-assessed health status changes from pre- to post-deployment form, US Armed Forces, 1 January 2003 - 31 October 2004.



Change in self-assessment of overall health status, pre- to post-deployment, calculated as: post deployment response - pre-deployment response, using the following scale for health status: 1= "poor"; 2="fair"; 3="good"; 4="very good"; and 5="excellent."

**Table 3. Deployment-related "exposure concerns"
on post-deployment health assessments,¹
US Armed Forces, January 2003-October 2004**

	Total	Exposure concerns	No exposure concerns	% with exposure concerns
Total	500,097	77,124	415,207	15.4
Component				
Active	324,291	40,570	279,227	12.5
Reserve	175,806	36,554	135,980	20.8
Service				
Army	297,043	58,066	234,587	19.5
Navy	66,438	4,156	61,188	6.3
Air Force	74,641	5,473	68,011	7.3
Marine Corps	61,975	9,429	51,421	15.2
Age (years)				
<20	17,294	1,333	15,753	7.7
20-29	264,644	35,047	226,039	13.2
30-39	139,207	24,267	112,695	17.4
40+	78,948	16,477	60,717	20.9
Gender				
Male	443,621	67,350	369,487	15.2
Female	56,433	9,771	45,681	17.3
Race/ethnicity				
Black	91,084	14,924	74,596	16.4
Hispanic	50,152	8,310	41,035	16.6
Other	1,094	180	895	16.5
White	325,732	49,012	271,925	15.0
Grade				
Enlisted	436,244	66,317	363,205	15.2
Officer	63,845	10,804	51,997	16.9

1. Post-deployment health assessments (DD form 2796) with completion dates: 1 January 2003-31 October 2004.

Note: total does not reflect missing responses to exposure concerns or missing reports of characteristics.

**Sentinel reportable events for all beneficiaries¹ at US Army medical facilities,
cumulative numbers² for calendar years through October 31, 2003 and 2004**

Reporting location	Number of reports all events ³		Food-borne								Vaccine Preventable					
			Campylo-bacter		Giardia		Salmonella		Shigella		Hepatitis A		Hepatitis B		Varicella	
	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004
NORTH ATLANTIC																
Washington, DC Area	265	235	.	3	4	1	3	2	3	4	.	.	.	3	2	4
Aberdeen, MD	58	53	.	.	.	.	.	1	.	.	.	.	.	.	.	.
FT Belvoir, VA	223	233	9	10	3	2	10	5	4	2	.	2	.	.	.	1
FT Bragg, NC	1,592	1,721	8	9	.	.	29	44	19	1	.	.	.	.	2	.
FT Drum, NY	158	110	.	.	1	.	.	1	.	.	.	.	.	.	2	.
FT Eustis, VA	217	206	.	1	.	.	1	1	.	.	.	.	.	.	2	.
FT Knox, KY	226	198	3	4	.	4	5	1	.	.	.	.	.	1	1	.
FT Lee, VA	157	156	.	.	.	.	2	.	.	.	.	.	.	.	.	.
FT Meade, MD	98	166	.	1	.	1	.	.	1	.	.	.	.	.	.	.
West Point, NY	70	60	2	1	.	.	2	1	.	.	1	.	1	1	.	.
GREAT PLAINS																
FT Sam Houston, TX	190	244	.	.	.	2	6	3	.	1	.	.	.	.	.	2
FT Bliss, TX	285	324	1	1	4	5	3	6	1	10	.	1	1	3	1	.
FT Carson, CO	432	568	10	2	5	1	2	3	1	1	4	.	.	1	1	.
FT Hood, TX	1,378	1,277	7	8	.	.	25	12	96	48	1	.	1	1	.	.
FT Huachuca, AZ	66	91	.	.	.	.	.	.	.	.	.	.	.	.	.	.
FT Leavenworth, KS	42	39	2	1	.	2	1	1	1	.	.	.	.	.	.	.
FT Leonard Wood, MO	169	226	3	1	.	2	.	3	.	.	.	.	1	1	3	1
FT Polk, LA	203	189	1	2	.	.	2	8	.	.	.	.	1	2	.	.
FT Riley, KS	192	213	4	1	4	1	1	1	.	.	.	1	2	.	.	.
FT Sill, OK	189	185	.	.	.	1	.	3	.	4	.	.	.	.	.	.
SOUTHEAST																
FT Gordon, GA	285	189	.	1	1	.	3	6	.	.	.	.	2	1	.	.
FT Benning, GA	403	424	1	.	3	6	9	16	7	3	.	.	.	.	.	.
FT Campbell, KY	426	738	4	7	.	3	4	4	.	7	.	.	.	.	.	4
FT Jackson, SC	208	277	.	.	.	.	1	.	.	.	1	.	.	.	.	3
FT Rucker, AL	69	61	.	.	.	1	5	3	6	.	2	.	1	.	.	1
FT Stewart, GA	273	512	.	2	.	2	12	10	4	3	.	.	.	2	1	.
WESTERN																
FT Lewis, WA	524	469	3	6	6	1	7	5	3	2	1	.	.	1	.	.
FT Irwin, CA	51	53	.	.	.	.	.	.	.	.	.	.	.	.	.	.
FT Wainwright, AK	125	189	1	1	.	.	.	2	.	.	.	1	.	1	.	.
OTHER LOCATIONS																
Hawaii	865	724	22	18	4	8	10	27	4	.	.	.	1	.	2	2
Europe	1,203	1,119	16	16	.	2	16	23	.	1	7	4	.	1	3	3
Korea	482	442	.	1	.	.	1	1	.	.	1	.	1	1	5	4
Total	11,124	11,691	97	97	35	45	160	193	150	87	18	9	11	21	23	25

1. Includes active duty servicemembers, dependents, and retirees.

2. Events reported by November 7, 2003 and 2004.

3. Seventy events specified by Tri-Service Reportable Events, Version 1.0, July 2000.

Note: Completeness and timeliness of reporting vary by facility.

Source: Army Reportable Medical Events System.

**(Cont'd) Sentinel reportable events for all beneficiaries¹ at US Army medical facilities,
cumulative numbers² for calendar years through October 31, 2003 and 2004**

Reporting location	Arthropod-borne				Sexually Transmitted								Environmental			
	Lyme Disease		Malaria		Chlamydia		Gonorrhea		Syphilis ³		Urethritis ⁴		Cold		Heat	
	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004	2003	2004
NORTH ATLANTIC																
Washington, DC Area	2	4	2	.	141	100	22	15	3	3	.	.	1	29	.	11
Aberdeen, MD	2	.	.	.	35	49	12	2	.	.	.	.	9	.	.	.
FT Belvoir, VA	1	.	1	1	160	181	34	22	.	3	.	.	.	.	1	2
FT Bragg, NC	1	.	6	9	1,120	1,160	223	253	6	9	95	116	4	3	78	111
FT Drum, NY	.	.	.	4	124	96	25	5	1	.	.	.	4	1	.	.
FT Eustis, VA	.	2	.	.	156	170	39	17	1	1	.	.	.	.	.	3
FT Knox, KY	.	.	.	.	182	157	29	14	.	.	.	.	.	.	1	14
FT Lee, VA	.	1	.	.	128	129	27	24	.	.	.	.	.	.	.	1
FT Meade, MD	.	3	.	.	82	138	15	22	.	.	.	.	.	.	.	.
West Point, NY	34	20	.	.	18	31	3	1	.	.	.	.	.	1	7	4
GREAT PLAINS																
FT Sam Houston, TX	.	.	.	2	150	164	32	30	1	1	.	.	.	.	.	22
FT Bliss, TX	.	3	.	.	211	217	46	49	2	1	.	.	.	.	1	1
FT Carson, CO	.	.	.	1	320	453	36	50	1	1	39	51	2	.	1	.
FT Hood, TX	.	1	3	3	761	717	236	211	5	1	169	209	5	.	11	49
FT Huachuca, AZ	.	.	.	.	61	87	5	4	.	.	.	.	.	.	.	.
FT Leavenworth, KS	.	.	.	.	34	26	3	8	.	.	.	.	.	.	.	.
FT Leonard Wood, MO	.	.	.	1	141	163	15	40	1	.	.	.	2	1	3	8
FT Polk, LA	.	.	1	.	146	144	44	30	.	1	.	.	.	.	8	2
FT Riley, KS	.	1	.	1	166	144	9	34	.	.	.	.	.	5	4	22
FT Sill, OK	.	.	.	.	130	122	21	17	1	1	32	.	.	2	4	32
SOUTHEAST																
FT Gordon, GA	.	.	1	1	245	147	18	25	5	1	.	.	.	.	2	3
FT Benning, GA	.	.	25	3	229	216	99	99	.	.	.	.	.	.	29	80
FT Campbell, KY	1	.	2	3	316	507	85	90	1	1	.	.	2	.	9	81
FT Jackson, SC	.	.	.	1	157	179	22	29	.	1	.	.	4	6	22	54
FT Rucker, AL	.	.	.	.	37	41	11	10	.	.	1	.	.	4	4	.
FT Stewart, GA	.	.	2	.	139	257	63	123	.	3	35	39	.	.	14	46
WESTERN																
FT Lewis, WA	.	1	2	.	345	335	68	41	.	.	77	62	.	1	1	2
FT Irwin, CA	.	.	.	.	39	42	11	9	.	.	.	.	.	.	.	2
FT Wainwright, AK	.	.	1	2	91	107	17	12	.	.	.	.	14	54	.	.
OTHER LOCATIONS																
Hawaii	.	.	2	2	605	517	111	99	.	.	.	.	.	.	19	15
Europe	2	15	8	6	890	806	206	181	2	2	1	.	4	1	33	7
Korea	.	.	19	11	373	345	53	48	2	3	6	.	3	6	10	17
Total	43	51	75	51	7,732	7,947	1,640	1,614	32	33	455	477	54	110	262	593

3. Primary and secondary.

4. Urethritis, non-gonococcal (NGU).

Note: Completeness and timeliness of reporting vary by facility.

Source: Army Reportable Medical Events System.

Commander
U.S. Army Center for Health Promotion
and Preventive Medicine
ATTN: MCHB-TS-EDM
5158 Blackhawk Road
Aberdeen Proving Ground, MD 21010-5422

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